

**PATENT COOPERATION TREATY**  
**PCT**  
**INTERNATIONAL SEARCH REPORT**  
(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference <b>20302314/SJ</b>	<b>FOR FURTHER ACTION</b>	see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.
International application No. <b>PCT/SG03/00223</b>	International filing date ( <i>day/month/year</i> ) <b>19 September 2003</b>	(Earliest) Priority Date ( <i>day/month/year</i> ) <b>19 September 2003</b>
<b>Applicant</b> <b>NITRIDE TECHNOLOGIES PTE LTD et al</b>		

This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of 4 sheets.

It is also accompanied by a copy of each prior art document cited in this report.

**1. Basis of the report**

- a. With regard to the language, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
  - the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).
- b. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international search was carried out on the basis of the sequence listing:
  - contained in the international application in written form.
  - filed together with the international application in computer readable form.
  - furnished subsequently to this Authority in written form.
  - furnished subsequently to this Authority in computer readable form.
  - the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
  - the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2.  Certain claims were found unsearchable (See Box I).

3.  Unity of invention is lacking (See Box II).

4. With regard to the title,

the text is approved as submitted by the applicant.

the text has been established by this Authority to read as follows:

5. With regard to the abstract,

the text is approved as submitted by the applicant

the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the drawings to be published with the abstract is Figure No. 8

as suggested by the applicant.

None of the figures

because the applicant failed to suggest a figure

because this figure better characterizes the invention

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## INTERNATIONAL SEARCH REPORT

International application No.

PCT/SG03/00223

**A. CLASSIFICATION OF SUBJECT MATTER**

Int. Cl. 7: H01L 21/4763, 21/285, 23/36, 23/367, 23/373, 31/024, 31/052, 31/18, H01S 5/024

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)  
 file dwpi: limit /ic h011-021 or h011-023 or h011-031 or h011-033 or h01s-005, gan or (gallium (w) nitride), sapphire or gaas or inp or si, epitax+ or epilayer?, copper or cu, adhesion (w) layer, seed (w) layer, (heat or thermal+) (s) (sink+ or spread+ or conduct+ or dissipat+ or remov+), laser or led? or (light (w) emitting), ohmic (w) contact, active (w) region, thick, electroplat+ or electrodeposit+, lift (w) off, (host or temporary or remov+) (2d) substrate

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 6562648 B1 (WONG et al.) 13 May 2003 Column 4, lines 3–17; figures 1a–1g	
A	US 2003/0064535 A1 (KUB et al.) 3 April 2003 Page 2, paragraphs [0032]–[0035]; figures 1(a)–1(d)	
A	US 6448102 B1 (KNEISSL et al.) 10 September 2002 Column 2, lines 5–38; figures 11a–11f	

 Further documents are listed in the continuation of Box C See patent family annex

* Special categories of cited documents:	
"A" document defining the general state of the art which is not considered to be of particular relevance	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"E" earlier application or patent but published on or after the international filing date	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"O" document referring to an oral disclosure, use, exhibition or other means	"&" document member of the same patent family
"P" document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search  
2 December 2003

Date of mailing of the international search report

09 DEC 2003

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## INTERNATIONAL SEARCH REPORT

International application No.

PCT/SG03/00223

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 6210479 B1 (BOJARCZUK et al.) 3 April 2001 Column 3, line 18–column 4, line 52; figures 1–6	
A	EP 1326290 A2 (XEROX CORPORATION) 9 July 2003 Abstract; figure 2	
E, A	US 6627921 B2 (WONG et al.) 30 September 2003 Column 4, lines 10–23; figures 1a–1g	

**INTERNATIONAL SEARCH REPORT**

Information on patent family members

International application No.

**PCT/SG03/00223**

This Annex lists the known "A" publication level patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

Patent Document Cited in Search Report			Patent Family Member			
US	6562648	JP	2002076523	US	2003122141	
US	2003064535					
US	6448102	JP	2000196197	US	6365429	
US	6210479	JP	10270712	JP	2000252224	JP 2002198539
		US	5946551	US	5981970	US 6344660
		US	6344662			
EP	1326290	CA	2414325	JP	2003234542	US 6455340
US	6627921	JP	2002076523	US	6562648	US 2003122141

**END OF ANNEX**